Community Webinar

Reach Codes:
Building Electrification & Electric Vehicle Charging Infrastructure

April 29, 2020

7:00 PM

City of Los Altos

OVERVIEW

- Platform: Attendees with questions can enter them in the comment section at the bottom of the screen
- Access: Webinar presentation will be emailed to those that registered for the webinar and will be posted on the City of Los Altos website
- Method: To provide feedback, comments and or questions after the presentation, please email: eancheta@losaltosca.gov

AGENDA

7:00 pm	Overview, Introductions and Timeline	City of Los Altos Staff
7:10 pm	SVCE Overview, Energy and Reach Codes and Developed Model	SVCE
7:20 pm	Background Code Adoption and Draft Ordinance Details	Environmental Commission Subcommittee
7:30 pm	Q & A	
8:00 pm	Closing	

City of Los Altos

INTRODUCTIONS

- **City of Los Altos Staff:**
  - Kirk Ballard - *Building Official*
  - Calandra Niday - *Assistant Planner*
  - Anthony Carnesecca - *Economic Development Coordinator*
  - Trevor Marsden - *Management Analyst Fellow*
  - *Emiko Ancheta - Sustainability Coordinator*

- **Silicon Valley Clean Energy:**
  - John Supp - *Account Services Manager*

- **Environmental Commission Subcommittee:**
  - Laura Teksler - *Chair of Subcommittee*
  - Don Weiden - *Chair of Environmental Commission*
  - Lei Yuan - *Vice Chair of Environmental Commission*

REACH CODES

What?

Local building energy codes that “reach” beyond the state minimum requirements for higher energy efficiency in building design and construction.

Why?

Building electrification and increased EV charging infrastructure is one key way to decrease Greenhouse Gas emissions which is a goal of the City’s Climate Action Plan.

When?

Currently under consideration for 2020 (continue to check the City website for updates).

Timeline for Ordinance Adoption

- Revise the draft ordinance
- 1st Reading of revised draft ordinance by Council
- 2nd Reading of ordinance by Council
- California Energy Commission (CEC) Review ~30-90 days
- Ordinance Implemented

SILICON VALLEY CLEAN ENERGY

Reach Codes
Buildings and EV Charging

April 2020

Purpose

SVCE role

Building codes – energy and EVs

Why make local amendments

Silicon Valley Clean Energy

Owned and Operated by Thirteen Local Communities

Jeannie Bruins
City of Los Altos

Courtenay Corrigan
Town of Los Altos Hills

Bob Nuñez
City of Milpitas

Javed Ellahie
City of Monte Sereno

Yvonne Martinez Beltran
City of Morgan Hill

Nancy Smith
City of Sunnyvale

Susan Ellenberg
Santa Clara County

Margaret Abe-Koga
Chair
City of Mountain View

Howard Miller
Vice Chair
City of Saratoga

Liz Gibbons
City of Campbell

Rod Sinks
City of Cupertino

Marico Sayoc
Town of Los Gatos

Fred M. Tovar
City of Gilroy

SVCE

- Mission 1 – source carbon-free power
  - ☑ Sourcing from geothermal, hydro, wind, and solar
  - ☑ Adding new wind and solar + battery storage power plants

- Mission 2 – provide it in a cost-effective fashion
  - ☑ Our communities have **saved over $50 million** on their utility bills

- Mission 3 – invest locally to support environmental and economic goals
  - ☑ $600k for heat pump water heaters via Air District and SVCE matching funds
  - ☑ $12 million for EV charging via CALeVIP and SVCE matching funds
  - ☑ RFP issued for battery storage for residential and commercial customers

SILICON VALLEY CLEAN ENERGY

Mission One - Clean Power

Wind
Hydro
Solar
Geothermal
Storage

Mission Two - SVCE Rates

According to PG&E's website, SVCE service saves residential customers about $0.02 per kilowatt hour, averaging about a $10 per month saving.

E-1 *

	PG&E		SVCE	
Residential: E-1	**PG&E**	**PGE Solarchoice** (100% Renewable)	**GreenStart** (50% Renewable)	**GreenPrime** (100% Renewable)
Generation Rate ($/kWh)	$0.11778	$0.09436	$0.06732	$0.07532
PG&E Delivery Rate ($/kWh)	$0.15013	$0.15013	$0.15013	$0.15013
PG&E PCIA/FF ($/kWh)	N/A	$0.02979	$0.03045	$0.03045
Total Electricity Cost ($/kWh)	$0.26791	$0.27428	$0.24790	$0.25590
Average Monthly Bill ($)	**$119.83**	**$122.67**	**$110.88**	**$114.45**

Monthly usage: 447 kWh

www.PGE.com/pge_global/common/pdfs/customer-service/other-services/alternative-energy-providers/community-choice-aggregation/svce_rateclasscomparison.pdf

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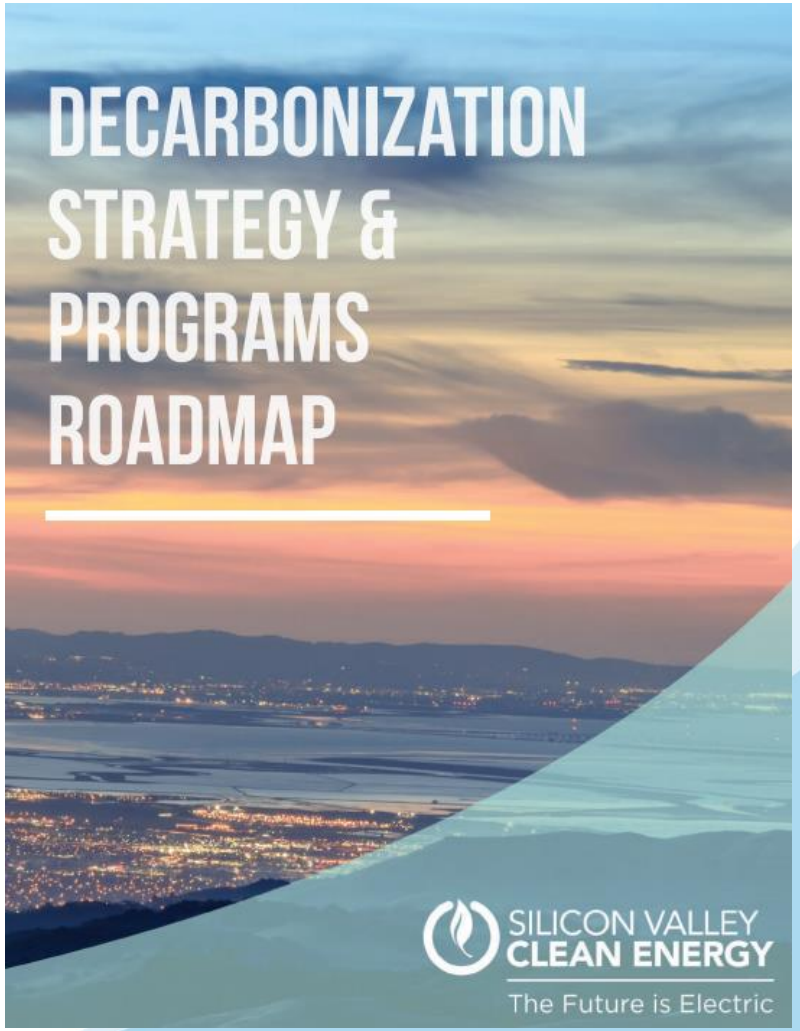
Mission Three – Local Investment

Includes over $10M in local investments

- EV charging
- Appliances
- Battery Storage (with solar)
- ….
- **Contract Technical Consultant for Building and EV Codes**



Program plan developed in collaboration with city staff, local and regional stakeholders and approved by SVCE Board in December 2018.

https://www.svcleanenergy.org/programs/

SILICON VALLEY
CLEAN ENERGY

Building Code

All buildings must meet state-provided code.

Codes change every 3 years.

When a city adopts a reach code, that becomes the new code for that city.

That building energy reach code must meet state required cost-effectiveness standards.

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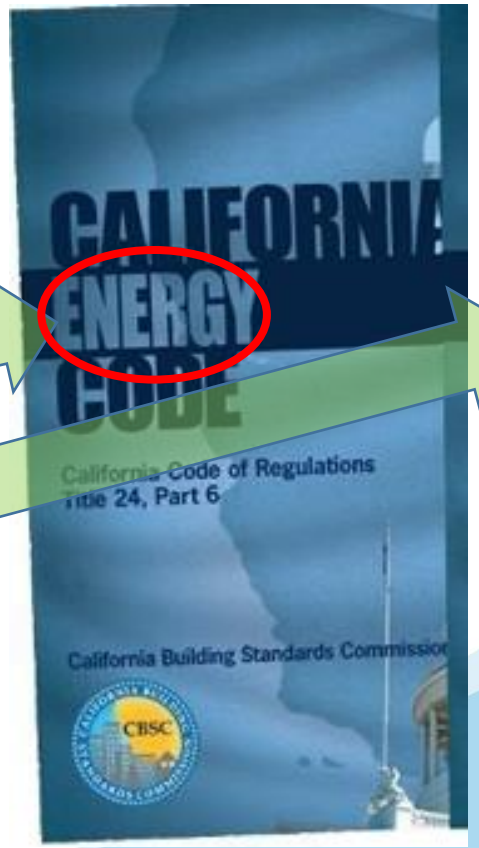
Building Codes

All 11 sections must be adopted every three years

Reach Code

(amend some sections within these two parts only)

Energy
Part 6



CALGreen
Part 11

Why Pro-Electric Reach Codes

New all-electric construction saves money

- Lower cost to construct
- Similar/lower cost to operate
- Better air quality
- Safer

Installing EV charging once a building is built costs 2-5 times more than during construction.

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Cost-Effectiveness

Building Energy Reach Codes must meet California Energy Commission's (CEC) Cost-Effectiveness test.

Additional cost-effectiveness metrics analyzed.

Outcomes for All-electric buildings:

- Cost less to construct
- More energy efficient
- Utility costs similar to or less than mixed fuel versions
- Lower overall lifetime costs

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Cost-Effectiveness

CALIFORNIA ENERGY CODES & STANDARDS
A STATEWIDE UTILITY PROGRAM

Title 24, Parts 6 and 11
Local Energy Efficiency Ordinances

2019 Cost-effectiveness Study:
Low-Rise Residential New Construction

Table 53: Single Family Climate Zone 4 Results Summary

Climate Zone 4 PG&E Single Family		Annual Net kWh	Annual therms	EDR Margin[4]	PV Size Change (kW)[5]	CO2-Equivalent Emissions (lbs/sf)		NPV of Lifetime Incremental Cost ($)	Benefit to Cost Ratio (B/C)	
						Total	Reduction		On-Bill	TDV
Mixed Fuel[1]	Code Compliant	0	347	n/a	n/a	1.88	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	0	306	2.5	(0.03)	1.68	0.20	$1,556	0.93	1.15
	Efficiency-Equipment	(0)	294	2.5	(0.02)	1.62	0.26	$758	2.39	2.67
	Efficiency & PV/Battery	(18)	306	10.0	0.07	1.55	0.33	$5,434	0.30	1.48
All-Electric[2]	Code Compliant	4,342	0	n/a	n/a	1.00	n/a	n/a	n/a	n/a
	Efficiency-Non-Preempted	3,775	0	3.0	0.00	0.89	0.11	$1,519	1.92	1.84
	Efficiency-Equipment	3,747	0	3.5	0.00	0.88	0.12	$2,108	1.52	1.52
	Efficiency & PV	814	0	17.0	1.84	0.48	0.52	$8,786	2.13	1.62
	Efficiency & PV/Battery	(11)	0	28.5	2.44	0.25	0.75	$14,664	1.46	1.61
Mixed Fuel to All-Electric[3]	Code Compliant	4,342	0	0.0	0.00	1.00	0.88	($5,349)	0.55	1.59
	Efficiency & PV	814	0	17.0	1.84	0.48	1.40	$3,438	2.64	>1
	Neutral Cost	2,166	0	10.0	1.35	0.70	1.18	$0	>1	>1

With <u>equal construction costs</u> (“Neutral Cost”),

All-electric is…

<u>More energy efficient</u> (TDV benefit >1)

and

<u>lower utility bills</u> (On-Bill benefit >1).

https://localenergycodes.com/download/1180/file_path/fieldList/2019%20Res%20Retrofit%20Cost-eff%20Report.pdf

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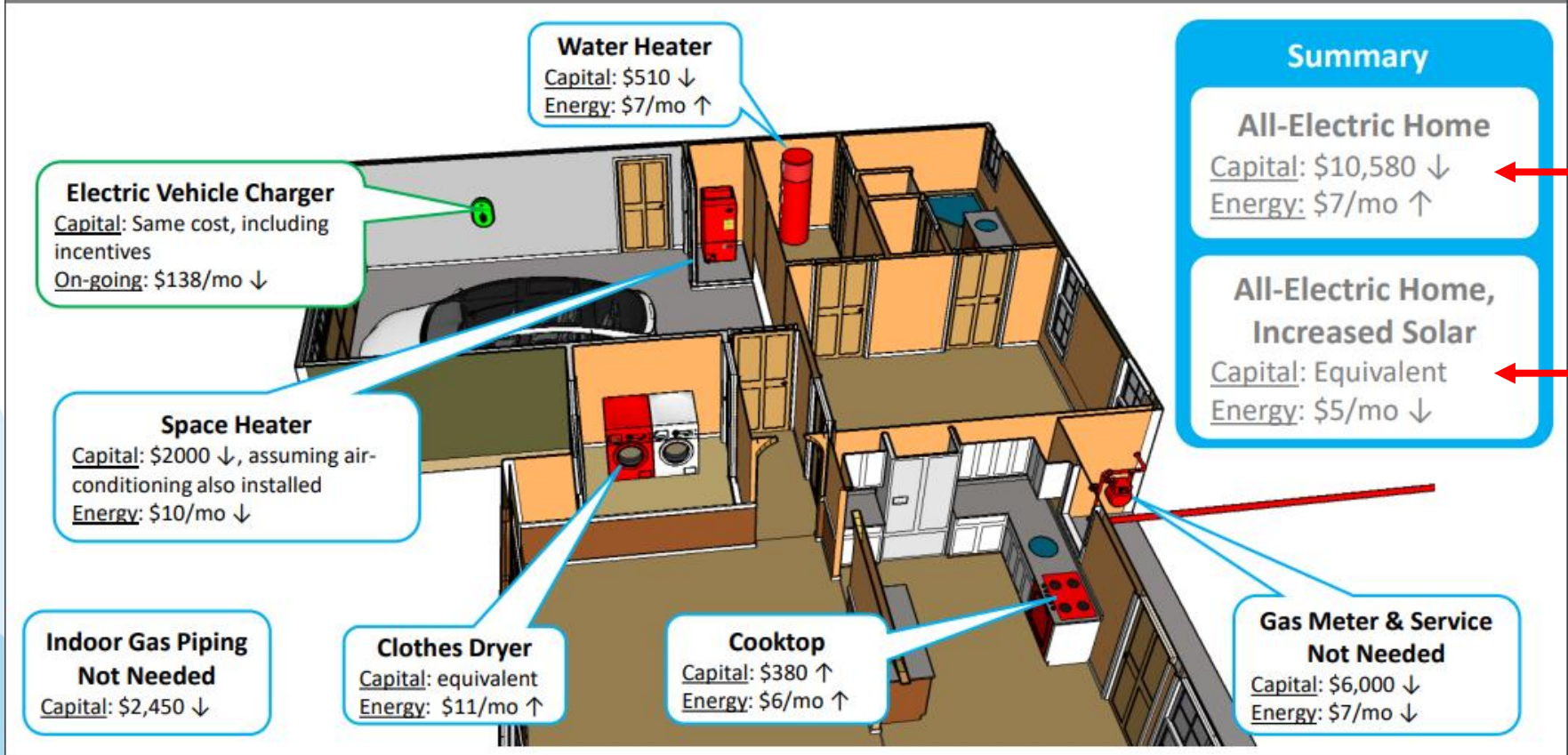
Electrifying New Single Family Homes in the Bay Area – The Cost Story



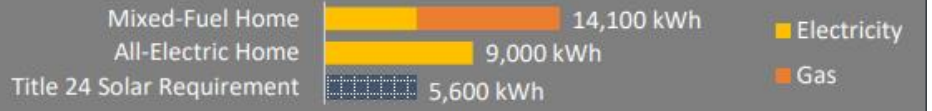
Summary

All-Electric Home
Capital: $10,580 ↓
Energy: $7/mo ↑

All-Electric Home, Increased Solar
Capital: Equivalent
Energy: $5/mo ↓

Capital Cost of Thermal Systems

Annual Energy Use & Generation



$191 Net Lifecycle Cost Savings per year for an all-electric home versus the mixed-fuel equivalent

3 MT CO2e Carbon Emissions Savings per home, per year based on 2030 grid mix

Capital and energy costs of thermal systems are based on Residential Building Electrification in California by E3 (April 2019); electricity costs specific to PCE/SVCE territory
All-Electric Home, Increased Solar bill impacts are based on Low-Rise Residential New Construction 2019 Cost Effectiveness Study by Frontier Energy (August 2019)
Version 8 10/21/2019

All-electric provides flexibility During construction

1) Lower cost to build, slightly higher monthly utility bill

2) Same cost to build, slightly Lower monthly utility bill

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Local Activity

9 communities have adopted.

3 communities considering. Status reflects current discussions and is not binding.

Member Agency	Status	Next Meeting	Date of Next Meeting	Code Language	Building Reach: Encourage Electric (1 + 2 + 2A)	Building Reach: Mostly Electric (1 + 2A)	Building Reach: 100% Electric (1 only)	EV Reach: Higher than CalGREEN
Mountain View		Approved		Begins on pg. 23			X	X
Morgan Hill		Approved		Begins on pg. 45			X	
Milpitas		Approved		Begins on pg. 1132	X			X
Monte Sereno		Approved		Begins on pg. 3	X[1]			X
Saratoga		Approved		Begins on pg. 33		X		X
Los Gatos		Approved		Begins on pg. 93			X	X
Cupertino		Approved		Ordinance			X	X
Los Altos Hills		Approved		Ordinance		X		X
Campbell		Approved		Begins on pg. 41		X		
Los Altos		1st Reading					X	
Santa Clara County		Staff Proposal			X			
Sunnyvale		Staff Proposal				X		
Gilroy	-	Declined						

Los Altos Environmental Commission

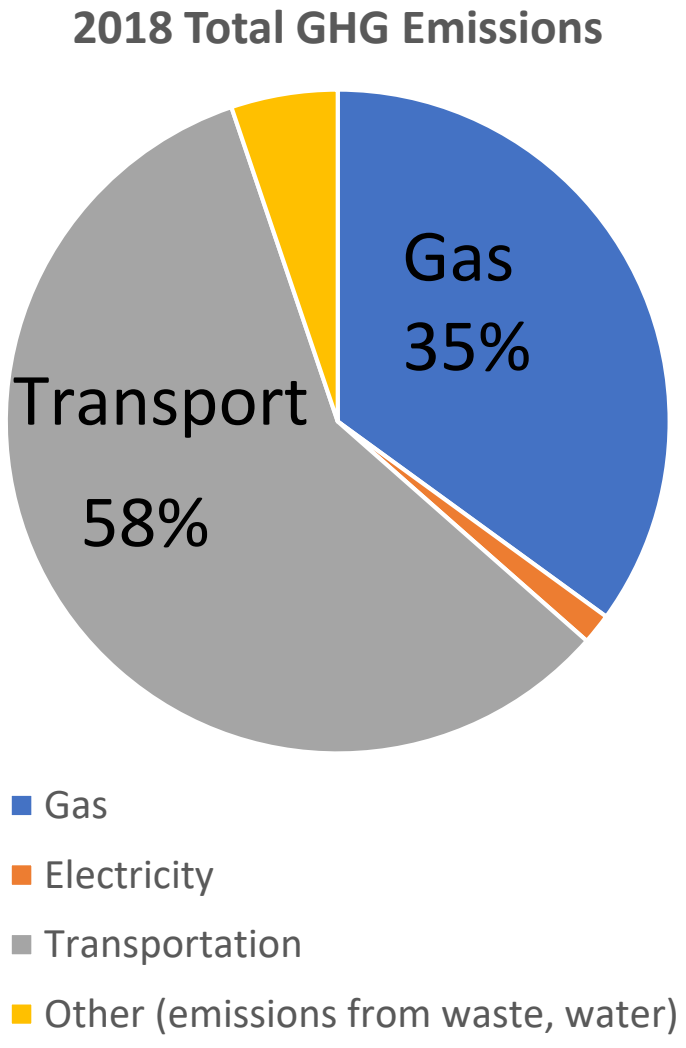
History of Commission Efforts

- Commission began investigating Green Building measures to achieve Climate Action Plan Goals in 2017
  - Addresses focus areas outlined in City's Climate Action Plan for Greenhouse Gas (GHG) Emissions Reductions
  - Reported to Council but difficult to implement as stand-alone municipality
- Regional Reach Codes Effort Spearheaded by SVCE & PCE
  - Provides regional approach and resources to help cities adopt
  - EC Presented Recommended Adoption to Council November 19, 2019

Los Altos Environmental Commission

Why Did Commission Recommended Adoption?

Will Help Reduce Gas and Transportation emissions – two largest sources of GHG emissions in City



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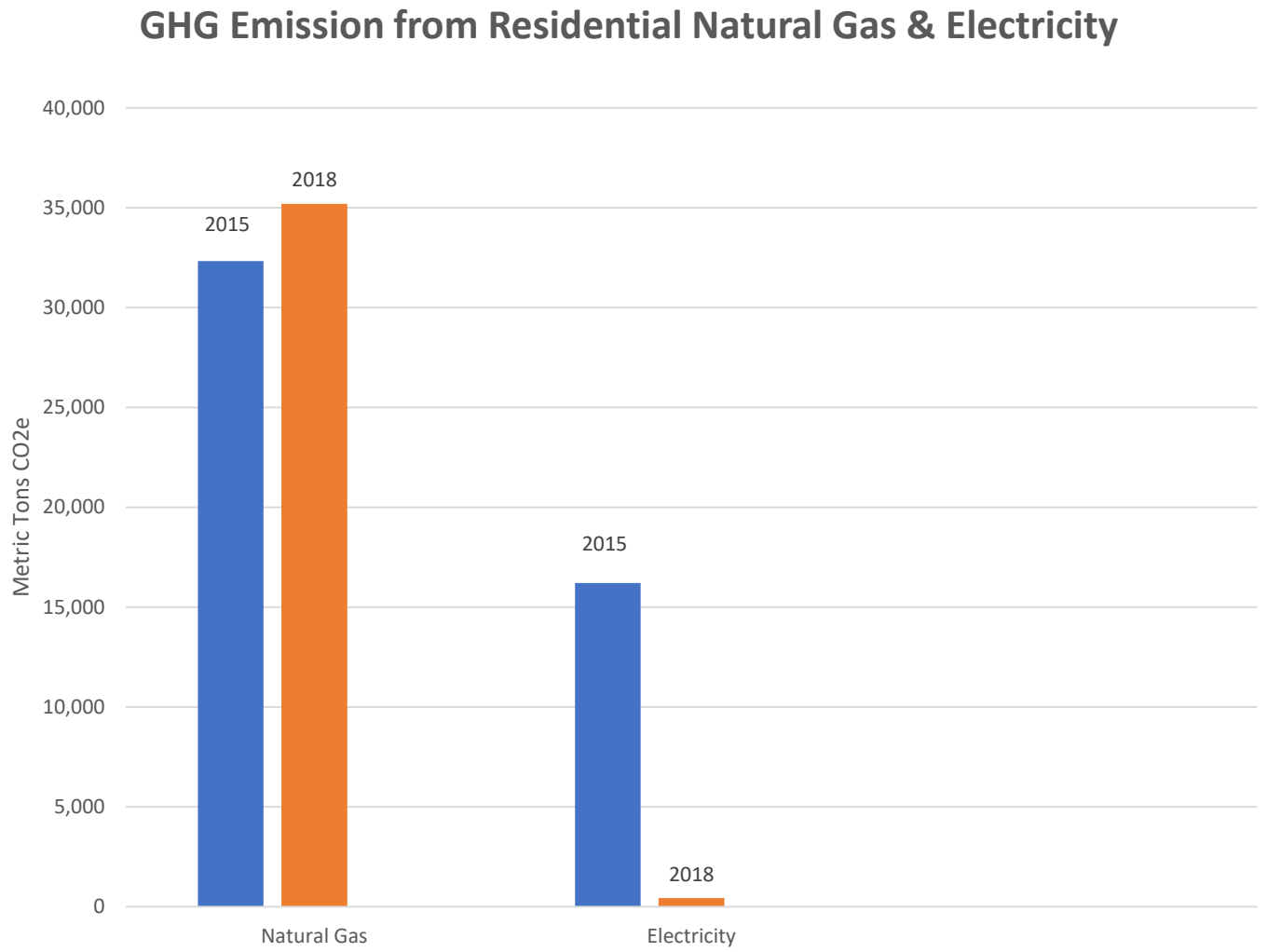
Why Eliminate Natural Gas?

Between 2015 & 2018 GHG emissions from Natural Gas have continued to grow while GHG emissions from electricity have decreased dramatically



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How do Electric Appliances Perform?

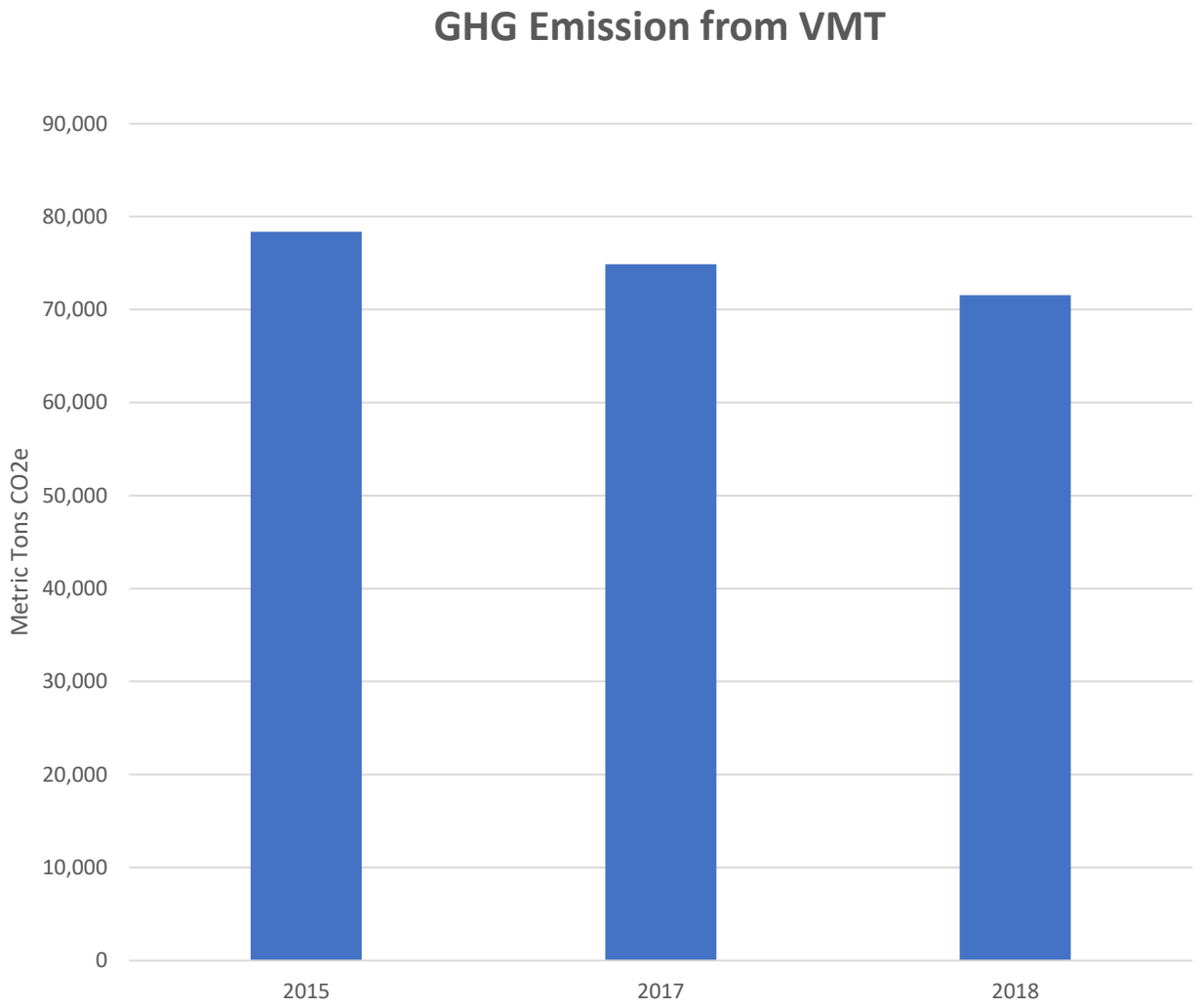
- Heat pump water and space heaters perform well and are generally more efficient than gas
- Induction stoves are reported to perform very well as are new electric stoves
- All-electric homes are common in other parts of the country, accounting for one in four homes in the U.S.

Los Altos Environmental Commission

Why Increase

Electric Vehicle Charging Infrastructure?

Emissions from Vehicle Miles Traveled (VMT) have decreased from 2015 to 2018 thanks to EV adoption but continue to be largest sector



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Current Proposal

Based on EC's work, staff input and direction from Council:

- 100% Electric Building for NEW CONSTRUCTION
- No specific exceptions by building type, but appeal process included
- Two Level II EV-ready parking spaces for single family homes

Los Altos Environmental Commission

- Would apply
  - Newly constructed detached ADUs
- Would Not apply
  - Any remodels or additions
  - Replacement appliances
  - Construction outside of buildings

Q & A

THANK YOU

For any questions, feedback or concerns, please contact:
eancheta@losaltosca.gov